

REMARKS

Applicants resubmit the revisions to the application as submitted in the Second Amendment After Final mailed December 30, 2002, made in consideration of the telephone interview of December 27, 2002.

Background

Claims 1-18 were presented for examination. In an Office Action dated September 4, 2002 (page 5) claims 6-8 and 11-14 were allowed. Claims 9, 10, 15, 17 and 18 were noted to be allowable but for issues related to 35 U.S.C. § 112, second paragraph. Claims 1-5 and 16 stand rejected under 35 U.S.C. § 102(b). In an Amendment After Final mailed October 31, 2002, Applicants provided amendments to claims 9, 10 and 15 addressing the Section 112 rejections. Arguments were then provided distinguishing claims 1-5 from the cited art.

In response to the October 31, 2002 Amendment, an Advisory Action issued which stated (apparently by accident) even the allowed claims would be rejected for purposes of appeal. Thereafter, a Second Amendment After Final was submitted (this document was resubmitted at the request of the Examiner's assistant (Mr. Dorian Evans)). A telephone conference was also undertaken. Following that telephone conference (and after the Examiner discussed the issue with her primary Examiner) it was Applicants' understanding the amendments to claims 5, 9 10 and 15 were acceptable. Particularly, these claims only addressed issues of consistency and, in fact did not require undue consideration.

A further Advisory Action issued on January 29, 2003, stating the Second Amendment After Final was not entered due to "the added limitation of a ribbon hinge structure" having an upper outer surface" (claim 1) requiring further consideration and search.

Applicants filed a Notice of Appeal on February 7, 2003 and submitted an Information Disclosure Statement on February 19, 2003.

The Office Action and Advisory Action

Claims 1-18 were presented for examination.

Applicants gratefully acknowledge the Examiner's indication as to the allowance of claims 6-8 and 11-14, as well as the allowable subject matter in claims 9, 10, 15, 17 and 18 (See page 5 of the Office Action dated September 4, 2002.).

Claims 1-5 and 16 stand rejected as being anticipated by Dhuler et al. (U.S. Patent No. 5,962,949).

In the Advisory Action of November 29, 2003, a Second Amendment After Final was not entered. The stated reason was that a limitation of a ribbon hinge structure "having an upper outer surface" required further consideration and search.

Response to Advisory Action

In response to the Advisory Action, Applicants resubmit the amendments and request the Examiner to reconsider the refusal to enter the proposed amendments. Particularly, for the reasons presented below, amendments do not raise new issues and these amendments should be entered.

The Claims Distinguish Over the Cited Art

Claim 16 is proposed to be cancelled.

It was noted that in rejecting claim 1, layers 52 and 54 of Dhuler et al. were recited as being equivalent to the "ribbon hinge structure" of independent claim 1. Thereafter, heater 56 was recited as being equivalent to a "electrical conductor" (now amended to "electrical conductor material"), of claim 1. During the December 27 telephone interview, Applicants explained the structural distinctions which exist between Dhuler et al. and the language of claim 1. Specifically, claim 1 includes language that the electrical conductor material was "carried on at least a portion of a surface of the ribbon hinge structure," while on the other hand in Dhuler et al. the electrical conductor material (heater) was embedded within layers 52 and 54.

The Examiner made the point that the "surface" of claim 1 could be interpreted in its broadest sense to cover this embedded structure design of Dhuler et al.

It was suggested that if claim 1 were to include more specific reference to the surface as being an upper outer surface of the ribbon hinge structure, that such language would distinguish over the Dhuler et al. structure.

In consideration of this position, claim 1 has been amended to recite that the ribbon hinge structure, which is formed on the device layer of the silicon-on-insulator wafer has "an upper outer surface." It is then further noted that the electrical conductor material is carried

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on at least a portion of this upper outer surface.

It is submitted this language provides the specific recitation distinguishing over Dhuler et al.

For this reason, it is respectfully submitted claim 1 is now distinguished. As claims 2-5 refer to and further define this now-distinguished claim, it is submitted these claims are also distinguished.

CONCLUSION

For the reasons detailed above, claims 1-15 and 17-18 are now in condition for allowance. An early notice to that effect is therefore earnestly solicited.

Respectfully submitted,

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Attachment: Version With Markings to Show Changes Made

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Please substitute amended claims 1, 5, 9, 10 and 15 for pending claims 1, 5, 9, 10 and 15 as follows:

1. (Twice Amended) A hinge for use in a micro-assembly employing electrical power supplied from an electrical power source, the hinge comprising:

a silicon-on-insulator wafer including a bottom substrate layer, a middle buried oxide layer and a single crystal silicon device layer;

a ribbon hinge structure formed in the device layer of the silicon-on-insulator wafer and having an upper outer surface, wherein the ribbon hinge structure is flexible and capable of movement out of the plane of the device layer; and

an electrical conductor material carried on at least a portion of [a] the upper outer surface of the ribbon hinge structure.

5. (Twice Amended) The invention according to claim 1 wherein the ribbon structure has at least one of (i) an isolation region formed within the ribbon structure, and within which is deposited the electrical [conduction] conductor material, or (ii) an area of insulation material which has been deposited and then patterned on the ribbon structure, wherein conductors can then be placed on top of the insulation material.

9. (Amended) The invention according to claim 6 wherein the micro-device includes an isolation region, formed within the micro-device, and in which the electrical [conductive] conductor material is deposited.

10. (Twice Amended) The invention according to claim 6 further including an isolation region formed within the ribbon structure, and within which is deposited the electrical [conductive] conductor material.

15. (Twice Amended) The invention according to claim 6 wherein the ribbon

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structure is configured with a mechanical integrity which permits application of a lifting out-of-plane mechanical torque to lift the [out-of-plane device] micro-device from 0° which is in [the] a horizontal plane, to 90° or more out of the horizontal plane.

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